

AMENDMENTS TO THE CLAIMS:

1.(previously presented): A superconductive filter module comprising:

a vacuum heat insulating vessel;

a superconductive filter assembly provided in the vacuum heat insulating vessel and composed of a filter housing having a signal input connector at which a filter input radio frequency signal is inputted and a signal output connector from which a filter output radio frequency signal is outputted and at least one columnar resonating member attached to an inner wall of the filter housing at one end thereof so as to be spaced apart from the signal input connector and the signal output connector so that a filter output radio frequency signal component outputted from the signal output connector selected from the filter input radio frequency signal components inputted through the signal input connector is brought into a resonance mode in the filter housing, the columnar resonating member being coated with a superconductive material on at least the surface thereof;

a cooling medium provided in the vacuum heat insulating vessel so that the superconductive filter assembly is disposed thereon, and capable of cooling the superconductive filter assembly so that the superconductive filter assembly can be operated under a superconductive state;

a signal input cable connected to the signal input connector of the superconductive filter assembly so that a filter input radio frequency signal to be inputted into the signal input connector can be transmitted to the inside of the filter assembly, the signal input cable having a heat insulating portion capable of insulating heat conductance into the superconductive filter assembly provided at a proper portion within the vacuum heat insulating vessel; and

a signal output cable connected to the signal output connector of the superconductive filter assembly so that a filter output radio frequency signal extracted from the signal output connector can be transmitted to the outside of the filter assembly, the signal output cable having a heat insulating portion capable of insulating heat conductance into the superconductive filter assembly provided at a proper portion within the vacuum heat insulating vessel, wherein

each of the filter housing and said at least one columnar resonating member is comprised of conductive material, the inner wall of the filter housing and the surface of the at least one columnar resonating member have a metal plating, and a superconductive film comprised of superconductive material is disposed on a surface of the metal plating.

2.(previously presented): A superconductive filter module according to claim 1, wherein said at least one columnar resonating member has one of a circular cross-section, an elliptical cross-section and a polygonal cross-section.

Claim 3.(canceled)

4.(previously presented): A superconductive filter module according to claim 1, wherein

the filter housing has on the inner wall thereof a center frequency adjusting member for adjusting a space amount between the inner wall of the filter housing and the other end of said at least one columnar resonating member so as to adjust the coupling capacity between the inner wall of the filter housing and the other end

of said at least one columnar resonating member, whereby the center frequency of the filtering frequencies can be adjusted, a surface of the center frequency adjusting member being comprised of a superconductive material.

5.(previously presented): A superconductive filter module according to claim 4, wherein the center frequency adjusting member is comprised of conductive material, the surface of the center frequency adjusting member has metal plating, and a superconductive film comprised of superconductive material is disposed on the surface of the metal plating.

6.(previously presented): A superconductive filter module according to claim 1, wherein

said at least one columnar resonator comprises a plurality of such columnar resonating members are provided having a regular interval interposed therebetween so as to form an array of said columnar resonating members on the inner wall of the filter housing, and the filter housing has on the inner wall thereof a plurality of bandwidth adjusting members for adjusting a space amount between the inner wall and the columnar resonating members so as to adjust the coupling capacity therebetween, whereby a bandwidth of the filtering frequencies can be adjusted, the a surface of the bandwidth adjusting members being comprised of a superconductive material.

7.(previously presented): A superconductive filter module according to claim 6, wherein said bandwidth adjusting members are made of conductive material, the surface

of each bandwidth adjusting member have respective metal plating, and a superconductive film comprised of respective superconductive material is disposed on the surface of the corresponding metal plating.

8.(previously presented): A superconductive filter module according to claim 7, wherein the conductive material includes either copper material or nickel material.

9.(previously presented): A superconductive filter module according to claim 7 wherein the respective metal plating includes any one of silver material, gold material and nickel material.

10.(previously presented): A superconductive filter module according to claim 1, wherein the superconductive material is made of any one of YBCO, NBCO, BSCCO, BSCCO, BPSCCO, HBCCO and TBCCO.

11.(previously presented): A superconductive filter module according to claim 1, wherein the signal input connector and the signal output connector have respective signal coupling units provided in the filter housing so as to be opposed to and be spaced apart from said at least one columnar resonating member, respectively.

12.(previously presented): A superconductive filter module according to claim 11, wherein each of the respective signal coupling units is provided with a signal coupling flat member.

13.(previously presented): A superconductive filter module according to claim 11, wherein each of the respective signal coupling units is provided with a signal coupling loop member.

14.(previously presented): A superconductive filter module according to claim 1, wherein

each of the signal input cable and the signal output cable is arranged as a heat insulating coaxial cable composed of a center conductor, an insulating member coating the center conductor, and an external conductor provided on the periphery of the insulating member so as to have a respective heat insulating portion.

15-18.(cancelled)

19.(currently amended): A superconductive filter module according to claim 14, characterized in that the external conductor is composed of a metal plating layer (133) coating the insulating member (132) at the outer periphery thereof and a resin layer (134) coating the metal plating layer (133), and at least the metal plating layer (133) also serving as the heat insulating portion.

20-21.(cancelled)

22.(previously presented): A superconductive filter assembly comprising:
a filter housing;

a signal input connector attached to the filter housing and connectable to a signal input cable for transmitting a filter input radio frequency signal;

a signal output connector attached to the filter housing at a position different from a position at which the signal input connector is attached, and connectable to a signal output cable for transmitting a filter output radio frequency signal; and

at least one columnar resonating member attached on an inner wall of the filter housing at one end thereof so as to be spaced apart from the signal input connector and the signal output connector so that a filter output radio frequency signal component selected from the filter input radio frequency signal components is brought into a resonance mode in the filter housing, the at least one columnar resonating member being coated with a superconductive material on at least the surface thereof, wherein

each of the filter housing and said at least one columnar resonating member is comprised of conductive material, the inner wall of the filter housing and the surface of the at least one columnar resonating member have a metal plating, and a superconductive film comprised of superconductive material is disposed on a surface of the metal plating.

23.(previously presented): A superconductive filter assembly according to claim 22, wherein said at least one columnar resonating member has one of a circular cross-section, an elliptical cross-section and a polygonal cross-section.

24.(cancelled)

25.(previously presented): A superconductive filter assembly according to claim 22, wherein

the filter housing has on the inner wall thereof a respective center frequency adjusting member for adjusting the corresponding space amount between the inner wall of the filter housing and the corresponding other end of said at least one columnar resonating member so as to adjust the respective coupling capacity between the inner wall of the filter housing and the other end of said at least one columnar resonating member, whereby the center frequency of the filtering frequencies can be adjusted, a surface of the center frequency adjusting member being comprised of a superconductive material.

26.(previously presented): A superconductive filter assembly according to claim 25, wherein the respective center frequency adjusting member is comprised of conductive material, a respective surface of the center frequency adjusting member has a corresponding metal plating, and a superconductive film comprised of superconductive material is disposed on the surface of the metal plating.

27.(previously presented): A superconductive filter assembly according to claim 22, wherein

said at least one columnar resonator comprises a plurality of such columnar resonating members which are provided with a regular interval interposed therebetween so as to provide an array of said columnar resonating members on the inner wall of the filter housing, and

the filter housing has on the inner wall thereof a plurality of bandwidth adjusting members for adjusting a space amount between the inner wall and said columnar resonating members so as to adjust the coupling capacity therebetween, whereby a bandwidth of the filtering frequencies can be adjusted, a surface of each bandwidth adjusting member being comprised of a superconductive material.

28.(previously presented): A superconductive filter assembly according to claim 27, wherein the bandwidth adjusting members are comprised of conductive material, the surface of each bandwidth adjusting member have a respective metal plating, and a respective superconductive film made of superconductive material is disposed on a surface of the corresponding metal plating .

29.(previously presented): A superconductive filter assembly according to claim 28, wherein the conductive material includes either copper material or nickel material.

30.(previously presented): A superconductive filter assembly according to claim 28 wherein the respective metal plating includes any one of silver material, gold material and nickel material.

31.(previously presented): A superconductive filter assembly according to claim 22, wherein the superconductive material is made of any one of YBCO, NBCO, BSCCO, BSCCO, BPSCCO, HBCCO and TBCCO.

32.(previously presented): A superconductive filter assembly according to claim 22, wherein the signal input connector and the signal output connector have signal coupling units provided in the filter housing so as to be opposed to and be spaced apart from the at least one columnar resonating member, respectively.

33.(previously presented): A superconductive filter assembly according to claim 32, wherein each of the respective signal coupling units is provided with a respective signal coupling flat member.

34.(currently amended): A superconductive filter assembly according to claim 32, wherein each of the respective signal coupling units is provided with a respective signal coupling loop member.

35.(previously presented): A heat insulating type coaxial cable for use with a superconductive filter assembly including a filter housing having a signal input connector at which a filter input radio frequency signal is inputted and a signal output connector from which a filter output radio frequency signal is outputted, and a columnar resonating member, each of the filter housing and the columnar resonating member is comprised of conductive material, the inner wall of the filter housing and a surface of the columnar resonating member have a metal plating, and the columnar resonating member is coated with a superconductive material on at least a surface thereof so as to bring into a resonance mode in the filter housing, a filter output radio frequency signal component outputted from the signal output connector selected from the filter input radio frequency

signal components inputted through the signal input connector, the coaxial cable being connectable to either the signal input connector or the signal output connector, the heat insulating type coaxial cable comprising:

a center conductor;

an insulating member coating the center conductor; and

an external conductor attached to the outer periphery of the insulating member and provided at a proper position thereof with at least one heat insulating portion capable of insulating heat from being conducted into the superconductive filter assembly.

36.(previously presented): A heat insulating type coaxial cable according to claim 35, wherein said at least one columnar resonator comprises a plurality of such heat insulating portions which are provided at a plurality of proper positions of the external conductor.

37-39.(cancelled)

40.(previously presented): A heat insulating type coaxial cable according to claim 35, wherein the external conductor is composed of a metal plating layer coating the insulating member at the periphery thereof and a resin layer coating the metal plating layer, and at least the metal plating layer also serving as the heat insulating portion.

41-42.(cancelled)

43.(previously presented): A heat insulating type coaxial cable connectable to a superconductive device including at least one element which is operated under a superconductive state, comprising:

a center conductor;

an insulating member coating the center conductor; and

an external conductor attached to the outer periphery of the insulating member and provided at a proper position thereof with a heat insulating portion capable of insulating heat from being conducted into the superconductive filter assembly, wherein

the external conductor is composed of a metal plating layer coating the insulating member at the periphery thereof and a resin layer coating the metal plating layer, and the metal plating layer having a cross-sectional area much smaller than that of the center conductor and the insulating member to serve as the heat insulating portion having a larger heat resistance to resist heat transmission on the metal plating layer.

44.(previously presented): A heat insulating type coaxial cable according to claim 35, wherein the external conductor is composed of a metal plating layer coating the insulating member at the periphery thereof and a resin layer coating the metal plating layer, and the metal plating layer having a cross-sectional area much smaller than that of the center conductor and the insulating member, the metal plating layer to serve as the heat insulating portion having a larger heat resistance to resist heat transmission on the metal plating layer.